ZURICH, JUNE 9 2022

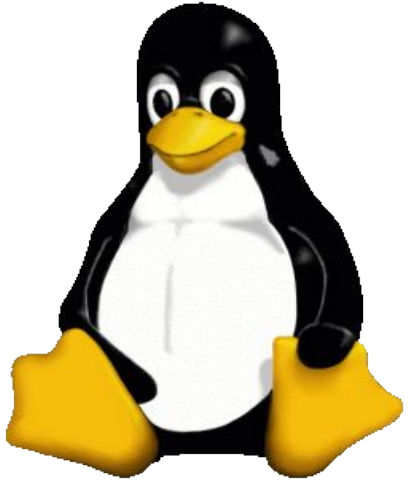
BLUEBOX - GO FOR KERNEL API TESTING

Florian Lehner

SECTION ONE

Why?

Linux Kernel API and Go

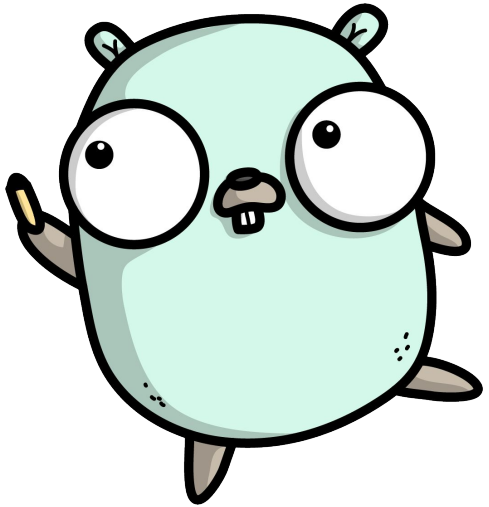


eBPF

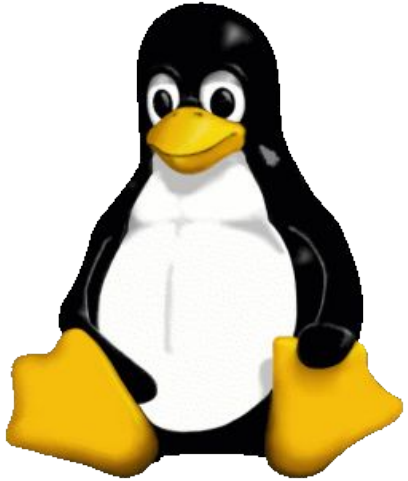
netlink

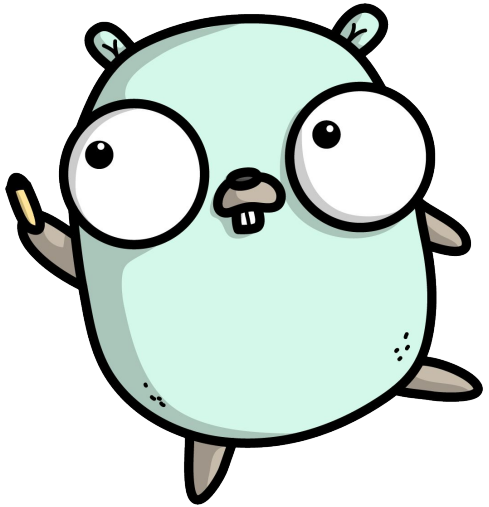
- tc
- conntrack
- nflog
- nfqueue

...

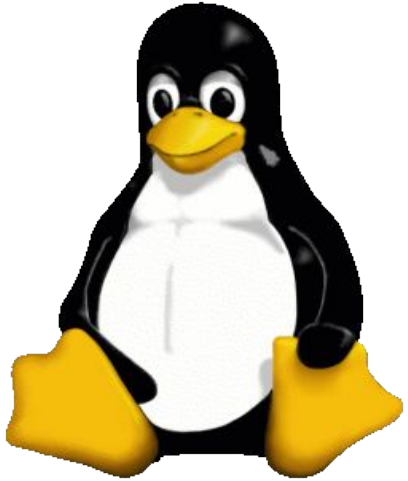


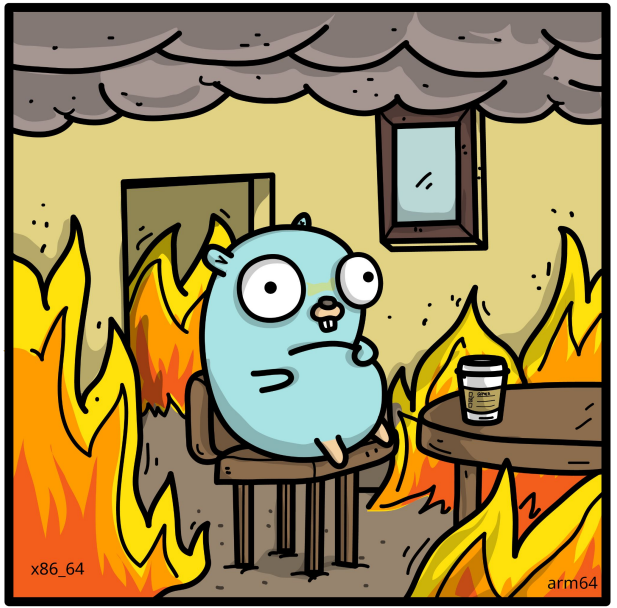
Linux Kernel API and Go





Linux Kernel API and Go





SECTION TWO

How?

Creating a initramfs in Go

- create Go program from template
- compile template to executable
- pack executables into archive

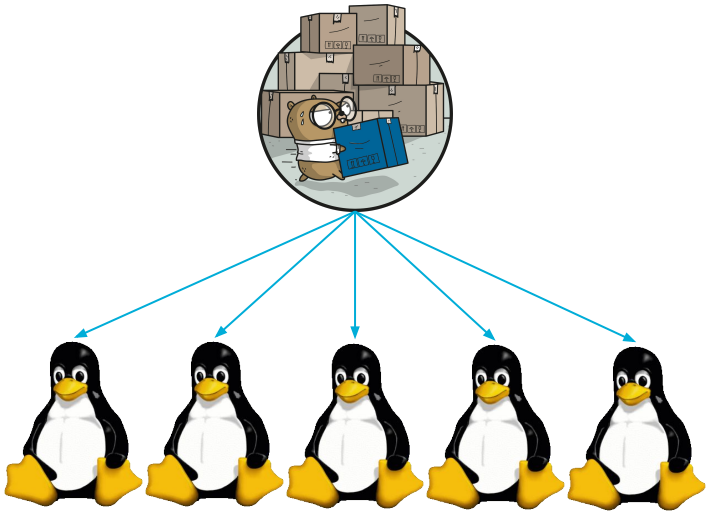
providing a minimal environment

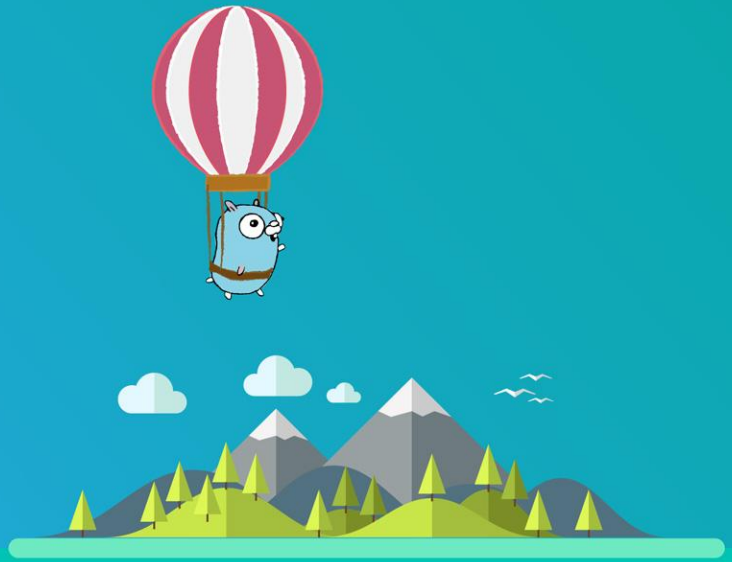
```
syscall.Mount("devtmpfs", "/dev", "devtmpfs", uintptr(0), "")
syscall.Mknod("/dev/tty", syscall.S_IFCHR | 0o666, 0x500)
syscall.Mknod("/dev/urandom",syscall.S_IFCHR | 0o444, 0x109)

syscall.Mount("tmpfs", "/tmp", "tmpfs", uintptr(0), "")
syscall.Mount("proc", "/proc", "proc", uintptr(0), "")

syscall.Mount("sysfs", "/sys", "sysfs", uintptr(0), "")
syscall.Mount("bpffs", "/sys/fs/bpf", "bpf", uintptr(0), "")
```

Use in a CI pipeline

1. Generate a initramfs
2. Distribute the initramfs
3. Boot n kernel(s) with the initramfs

github.com/florianl/go-tc/blob/main/.github/workflows/integration.yml





Questions?

Code
github.com/florianl/bluebox

Gophers by
github.com/ashleymcnamara/gophers

Tux by
wikipedia.org/wiki/Tux_(mascot)

THANKS!

Upcoming

- Make the environment configurable
- Switch from RAMFS to TMPFS